CHAPTER III

METHOD OF THE RESEARCH

A. Research Design

The type of this research is an experimental research. Gay and Peter Airasian argued that experimental research is the only type of research that can test hypotheses to establish cause–and-effect relationship.[1] In addition, Creswell stated that researchers can use experimental research if they want to establish possible cause and effect between the independent and dependent variables.[2] So, the writer can conclude that this research is an experimental research because this research aims at looking at the influence of the independent variable toward the dependent variable.

The design in this research was a quasi-experimental design as a kind of research design that involved the collection of the data for the purpose of finding out the different effect of control class and experimental class by using a treatment in teaching learning process. So, it is clear that the research was done during class hours. This design was chosen because it was not possible for writer to select students randomly to be respondents of the

[1]L.R. Gay and Peter Airasian, *Educational Research Competencies for Analysis and Application*. Six Ed. (New Jersey: Prantice Hall, Inc, 2000).p. 367

[2]John W. Creswell, *Educational Research Planning, Conducting, and Evaluating Quantitative and Qualitative Research*, Third Ed. (New Jersey: Prentice Hall, 2008).p. 299

research sample. According to Gay and Peter Airasian, sometimes it is just not possible to randomly assign individual participants to group.[3]

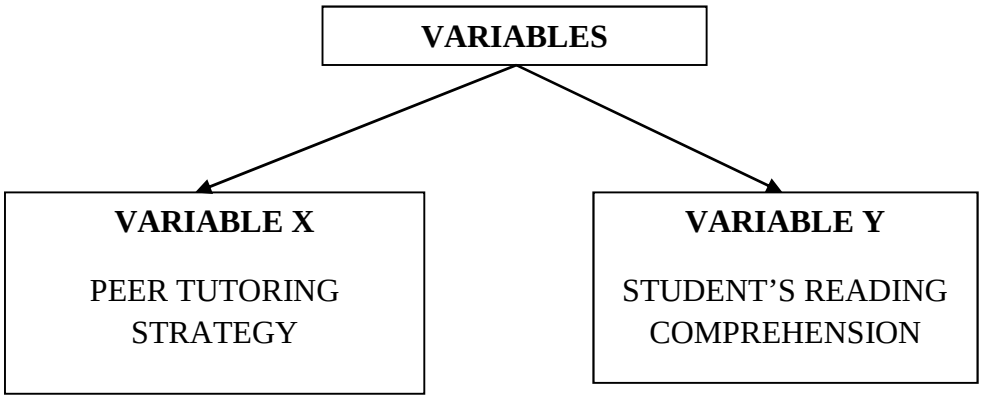
Gay and Airasian said that experiment is the quantitative approach that provides the greatest degree of control over the research procedures.[4]

> "These are comparative methods in which different groups of people or organizations receive different opportunities and the researcher attempts to demonstrate the differences among the groups on some types of quantitative measure such as students' examination results."[5]

Therefore, this design is appropriate to be used in conducting this research. Considering its characteristics, a quasi-experimental is more useful in the learning teaching process.

There were two variables on this research:

Picture I. Variables of the Research



[3] Op.Cit.p.394
[4] L.R. Gay, and Peter Airasian, *Educational Research*. (New Jersey: Prentice Hall, 2000), pp.15
[5] Gary Anderson, *Fundamental of Educational Research*. (London: Falmer Press, 1998), pp. 96

Therefore, there were two classes as the subject of this research. The time series design was a quasi-experimental design that used control group and experimental group. Those groups were given the similar pretest and post-test but only the experimental group got a treatment. The design of this research can be described as follows:

Table III. 1

Research Design

Class	Pre Test	Treatment	Post Test
Control Group	✓	ò	✓
Experimental Group	✓	✓	✓

B. Time and Location of the Research

The location of this research was at Senior High School YKPP Dumai. This research was conducted from 15th July to 31st August 2013. The writer conducted this research in eight meeting for the control group and the experimental group as extracurricular activity. So, this research did not disturb the learning process during class hours.

C. Object and Subject of the Research

1. Object of the Research

The object of this research was the effect of using Peer Tutoring Strategy toward students' reading comprehension.

2. Subject of the Research

The subject or the sources of data of this research was the first semester students of the first year at Senior High School YKPP Dumai registered in 2013/2014 Academic Year. The subject consisted of two classes that contained 60 students.

D. Population and Sample

1. Population

The population of this research included all of the first year students of Senior High School YKPP UP II Dumai 2013/2014 academic year that consisted of nine classes. There were 282 students of the first year of Senior High School YKPP UP II Dumai. The population of the research is as follows:

Table III. 2

Population of the Research

No.	Class	Population
1	X. 1	32 students
2	X. 2	31 students
3	X. 3	33 students
4	X. 4	30 students
5	X. 5	30 students
6	X. 6	32 students
7	X. 7	32 students
8	X. 8	30 students
9	X. 9	32 students
Total		282 students

2. Sample

From the table above, the writer took 60 students as the sample of this research. They were divided into two groups. The first group was the experimental group that consisted of 30 students and the second one was the control group that consisted of 30 students.

In this research, the writer used cluster technique sampling in choosing the classes. Cluster sampling randomly selects groups, not individual.[6] It means that the writer chose two groups that had similar characteristic by doing try out and seeing students' score in English subject. Those are X.4 as experimental group and X.5 as control group.

E. Technique of Data Collection

1. Instrumentation

In order to get some data that are needed to support this research, the instrument used was test. Test is a technique that is used to measure the students' achievement in language proficiency. Syafii said that tests are assessment instruments that pose problems for students to solve.[7] Supported by Hughes, the purpose of testing is to discover how successful students had been in achieving the objectives of a course of

[6] L.R. Gay, and Peter Airasian. *Educational Research*. (New Jersey: Prentice Hall, Inc, 2000), pp. 129

[7] M. Syafi'I S. *A Writing of English for Academic Purpose*. (Pekanbaru: LBSI, 2011), pp. 131

study.[8] In addition, Madsen also states that tests of reading come in a wide variety of form and evaluate a broad spectrum of reading activity.[9]

Before giving the test to the research participants, the writer gave a test to the other classes that had the same level in the achievement of learning process with research participants to find out the validity and the reliability of the test.

2. Validity of the Test

A test is said to have content validity if its content constitutes a representative sample of the language skill.[10] Validity refers to the degree in which our test or other measuring device is truly measuring what we intended it to measure.[11] It means that our test is concerned what we want to measure. It determines whether the test results have validity or not.

According to Arikunto, level of difficulty is one aspect to consider in analyzing whether a test is good or not. The good test is a test that is not too easy and not too difficult.[12] The formula that can be used in measuring the validity of the test items is as follows[13]:

$$P = \frac{B}{JS}$$

Where : P : Difficulty Index

[8] Arthur Hughes, *Testing for Language Teachers*, (United Kingdom: Cambridge University Press, 2003).pp. 26.

[9] Harold S. Madsen, Techniques in Testing, (New York: Oxford University Press, 1983) p.76

[10] Arthur Hughes, *Testing for Language Teachers*, (United Kingdom: Cambridge University Press, 2003).pp. 26.

[11] Validity and Reliablity. Retrieved on April 5th, 2012. http://allpsych.com/researchmethods/validityreliability.html

[12] Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, (Jakarta: Bumi Aksara, 1996). p.211

[13] Ibid. p. 212

B : number of students who answered correctly

JS : The number of students

The difficulty index can be classified as follows:[14]

The item with P 1.00-0.30 is difficult
The item with P 0.30-0.70 is medium
The item with P 0.70-1.00 is easy

Based on the description above, Arikunto also argues that the good item is supposed to be medium. It is not too difficult and not too easy.

For further information of the text, the writer showed the blueprint of both tests as follow:

Table III. 3

Blue Print

No.	Indicator of Items	Number of Items	Items Number
1.	Identifying main ideas	5 items	1, 7, 13, 19, 25
2.	Identifying pronominal reference	5 items	2, 9, 14, 20, 26
3.	Finding out the purpose of writer	5 items	3, 10, 15, 21, 27
4.	Inferring meaning of unknown word	5 items	4, 8, 16, 22, 28
5.	Making propositional information	5 items	5, 11, 17, 23, 29
6.	Identifying the generic structure	5 items	6,12,18,24,30

[14] Ibid. p.214

Students are able to identify the main idea

Variable	Identify the main idea					N
Item no	1	7	13	19	25	31
Total of correct item	19	11	12	21	13	
P	0, 58	0, 32	0, 48	0, 35	0,42	

Students are able to identify pronominal reference in text

Variable	Identify pronominal reference in text					N
Item no	2	9	14	20	26	31
Total of correct item	13	19	20	11	14	
P	0.42	0. 61	0.65	0.32	0.61	

Students are able to find out the purpose of the writer

Variable	Find out the purpose of the writer					N
Item no	3	10	15	21	27	31
Total of correct item	10	20	17	21	20	
P	0.32	0.58	0.55	0.65	0.45	

Students are able to infer the meaning of an unknown word

Variable	Infer the meaning of an unknown word					N
Item no	4	8	16	22	28	31
Total of correct item	18	14	13	21	15	
P	0.58	0.45	0.39	0.68	0.42	

Students are able to make propositional informational inferences, answering question beginning with who, when and what

Variable	Make propositional informational inferences, answering question beginning with who, when and what					N
Item no	5	11	17	23	29	31
Total of correct item	10	19	18	11	11	
P	0.35	0.58	0.58	0.32	0.35	

Students are able to identify the generic structure

Variable	Identify the generic structure					N
Item no	6	12	18	24	30	31
Total of correct item	18	12	20	13	10	
P	0.58	0.39	0.65	0.42	0.32	

Based on the table above, the standard of difficulty index of test is "p" $\geq$ 0.30 and $\leq$ 0.70. It is pointed out that item difficulty in average of each item number.

In analyzing the validity and reliability of the test, the researcher used correlation product moment formula by dividing items into odd and even (split-half method), the formulations are as follows[15]:

The formulation of validity:

$$r_{XY} = \frac{N\sum XY - (\sum X)(\sum Y)}{N\sum X^2 - \sum X^2 \; N\sum Y^2 - \sum Y^2}$$

r_{XY} : Correlated Confession between X and Y

[15] Suharsimi Arikunto. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara, (2008). p. 70-93

X : Odd Items (1,3,5,6,7,9,11,13,15,17,19,21,23,25, 27,29)

Y : Even Items (2,4,6,8,10,12,14,16,18,20,22,24,26,28,30)

N : Respondents

It was calculated as follows:

$$r_{XY} = \frac{31(1615)-(215)(231)}{\sqrt{31(1601)-215^2}\ \sqrt{31(1855)-231^2}}$$

$$r_{XY} = \frac{51181-49665}{\sqrt{49631-46225}\ \sqrt{57505-53361}}$$

$$r_{XY} = \frac{1516}{\sqrt{3406}\ \sqrt{4144}}$$

$$r_{XY} = \frac{1561}{\sqrt{14114464}}$$

$$r_{XY} = \frac{1516}{3756.92}$$

$$r_{XY} = 0.4035$$

3. Reliability of the Test

A reliable test is consistent and dependable.[16] It means that the test has to get the similar result in two different occasions to same students or sample. In this research, the writer used Spearman-Brown formula to measure the reliability of all items in test as follows:[17]

The formulation of reliability:

$$r_{11} = \frac{2\, r_{1/2\,1/2}}{1 + r_{1/21/2}}$$

[16] H. Doughlas Brown. *Language Assessment Principle and Classroom Practices*. New York: Logman. (2007).pp. 20

[17] Suharsimi Arikunto. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara. (2008).pp. 93

It was calculated as follows:

$$r_{11} = \frac{2 \times 0.4035}{1 + 0.4035}$$

$$r_{11} = \frac{0.807}{1.4035}$$

$$r_{11} = 0.574$$

Based on the analysis of validity and reliability above, it can be seen that the r_{value} of validity was 0.4035 and r_{value} of reliability was 0.574. According to Arikunto, the value of correlation coefficients as follow[18];

1. Between 0.800 to 1.00 = Very High
2. Between 0.600 to 0.800 = High
3. Between 0.400 to 0.600 = Enough
4. Between 0.200 to 0.400 = Low
5. Between 0.00 to 0.200 = Very Low

In conclusion, validity of the test was included into enough category while reliability of the test was categorized into enough category too.

[18] *Ibid.* p. 75

F. Technique of Data Analysis

There were 25 questions for the pre-test and post-test. Each question was valued 4. The students score is based on the number of their correct answer divided by the number of items and multiplied by 100.[19]

$$P = X. \frac{100}{N}$$

Where : P : Individual Score

X : the number of correct answer

N : the number of respondent

Both of pre-test and post-test given to students have the same material but in a different time.

In order to find out whether or not there is a significant effect in improving students' comprehension by using Peer Tutoring Strategy of the two classes. The data were taken from students' scores in final test. Before applying t-test, it is necessary to find out several scores as follows[20]:

1. The first formula was used to find the means or average of each group. It was calculated by using formula:

$$Mx = \frac{\sum fX}{N}$$

Where: Mx = the average score

$\sum fX$ = sum of the row score

N = the number of students

[19]FitriWulandari, *The Effect of SQ4R Method in Comprehending Reading Text of the second Year Students at SLTP N 4 SiakHulu*. A Thesis.UR.pp. 28

[20]Suharsimi Arikunto. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara. (2008). pp. 70-93

2. The second formula was used to find out the result of the standard deviation of each group. It shows the spread of scores. It measures the degree to which group of score deviates from the mean.

$$SDx = \sqrt{\frac{\sum fX^2}{N}}$$

Where: SDx = Standard Deviation of Variable X

$\sum fX^2$ = Sigma of individual score quadrate of students score

$\sum fX$ = Sigma of individual score of students score

N = The number of students

3. The third formula is used to calculate the value.

$$to = \frac{Mx - My}{\sqrt{\left(\frac{SDx}{\sqrt{N-1}}\right)^2 + \left(\frac{SDy}{\sqrt{N-1}}\right)^2}}$$

Where: to = The valuable of t obtained/table

Mx = Mean score of post-test experimental class

My = Mean score of post-test control class

SDx = Standard deviation of post-test experimental class

SDy = Standard deviation of post-test control class

N = Number of students

4. The final step is to find out the t-score that aims at figuring out the degree of freedom of two groups. It is used to determine whether the t-score is a

significant value or not. To find the degree of freedom, the following formula is used:

$$df = Nx + Ny - 2$$

If the value of t-calculation is bigger than value of t-table, it means that alternative hypothesis is accepted. Conversely, if the value of t-calculation is smaller than value of t-table, it means that null hypothesis is accepted.